

# **The Effects of China's Local Government Investment on Economic Growth and Excessive Investment Issue**



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## **Declaration**

I hereby declare that the report The Effects of China's Local Government Investment on Economic Growth and Excessive Investment Issue: Exploring Adaptation Measures is the result of my original research effort and is conducted under the guidance of my academic supervisor. And I have tried my best to cite all quoted theory and contents with proper referencing procedure.

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**Abstract:** Based on the panel data of 3 different development-level provinces in the year of 1995-2011, this paper examines the effects of the local government investment on economic growth. The empirical result shows that the local government investment plays a significant positive role in economic growth and employment. However, while the proportion of local government investment to GDP had a remarkable rise after 2000, the elasticity of local government investment on economic growth declined, which shows that there is a big room for raising the efficiency of local government investment.

This paper also argues that the role of local governments as investors must be weakened, and local governments of different levels should lessen direct economic intervention and concentrate on public regulation.

**Key Words:** Government Investment, Investment Efficiency, Excessive Investment Issue



# **1 Introduction**

## **1.1 Objectives**

This research will be based on the previous research achievements and especially appreciate research of Qin D and Song HY on the China's efficiency of government investment[1]. Many researchers have been scientifically analyzed the links among the macroeconomic factors and how they impact each other in China's economic circumstance. Some Macroeconomic theories can explain the framework of the general government investment behaviors. The databases of IMF and China's governmental economic sectors provide the most reliable data and information about the Consumption expenditures and Gross investment.

This research is going to describe the status quo of Chinese government-oriented investment, analyzing the scale and the portfolio of government investment. Base on the calculated data, the major affereffects of over-investment will be identified in this article, in the meantime, based on the panel data of 3 different development-level provinces in the year of 1995-2011, this paper examines and analyses the effects of the local government investment on economic growth by Cobb-Douglas production function. Several technical matters which concerned with local government fixed asset investment will be analyzed. In order to find out the further prospect trend, the possible trends of China's government-oriented will be predicted and base on that, this article will provide several suggestions concerned with how to create a long-term, healthy and stable development trajectory.

## **1.2 Background of China's Economy and Government-oriented Investment**

Between 1978 and 2011, China growth has been remarkable, at nearly 10 percent per year. Especially after the financial crisis at 2008, China's economy still growth rapidly, becoming the powerhouse of world economy. According the annual report of IMF, the total output 5978.63 billion of China surpassed Japan to be the second largest economy in 2010. As we all know, China's economy relied heavily on investment, consumption and export. Because of the financial crisis and appreciation of RMB, the proportion of consumption and export was declining. In order to keep rapid growth, Chinese government made a "4000 billion investment plan" to stimulate the economy, leading the investment accounted 70.1% of contribution rate of GDP. In fact, China's investment account for more than 57 percent of its GDP compared with 21 percent for Japan. By contrast, domestic demand as a proportion of GDP remains low by international standards. The main reason driving this extremely high

investment is excessive government-oriented investment.

In 2011, government investment accounted for 76.1 percent of total investment, and 57 percent of GDP, surpasses the share of total investment in GDP of most other countries. This data has resurrected a debate as to whether the economy, particularly investment, is “overheating”, and whether the investment ratio is “too high”.

Behind high investment is the pursuit for GDP growth by the government. There are some difference conceptions concerned with government-oriented investment. Government-oriented investment, consisting of various fixed assets, is a fiscal approach by which fiscal funds are invested in industry cultivation and economic development to lay foundation for various industries, boost economy and facilitate the implementation of nation-wide industry policies. Government plays a main role in government-oriented investment activities and it's a very important part of total investment. To summarize the definition of government investment, two main conceptions can be list here. First, investments are divided by the different source of capital, government-oriented investment involves all of the fixed asset investment, special construction fund, national debt which expend from the financial budget. Second, according the main actor of investment, all of the fixed asserts which constructed and purchased by government or state-own enterprises belong to government-oriented investment. According to the definition of fixed assets investment by China's National Statistic Bureau, it included 8 categories: state own investment, collective investment, private investment, pooling investment, joint-stock investment and foreign investment, and all the data concerned government investment is derived from the statistic of state own investment.

### **1.3 Main Policies of China's Government Investment and the competition between central government and local government**

In 1979, < The Report of capital construction appropriation>, which was designed for use the Compensation funds to manage government financial investment, was approved by China's State Council. In 1988, < The Reform Plan for the Investment Management System> was approved by State Council, the main point of this plan concerned in the field of financial source, the bound of government investment and the operation of government investment, leading the development of government investment fluctuated widely. Follow the requirement of South tour speech by China's leader Deng Xiaoping, the state council decided to promote the proceed of government investment reform, In 1992, < Regulations on ownership transformation of State-run Enterprises> was decreed to reduce the numbers of State-run Enterprises. In this period, more and more foreign and private capitals enter investment market; the increase rate of government investment was declined. From 1998,

China started the proactive fiscal policy to stimulate domestic demand because of the influence of Asia Financial Crisis. In July 2004, < Several Decisions about the Investment System Reform> was approved, and the influence of this important document was lasted until now.

The transiting process of China from traditional planned economy to market economy is also a process for governments to change their roles. In this transition process, China takes a path of gradual reformation, and the central government gradually loses its direct control on economy and lessens its administrative power on state-owned economy. However, the Central Government did not give enterprises the complete administrative power; instead, it passed the administrative power to local governments. Thus, the local governments gained more power in economic decision, in examining large investment projects, and in issuing license and in controlling land resources. This made the local governments have great power on intervening local economic development.

On the other hand, the establishment of fiscal decentralization system in a great degree intensified the economic interest of local governments, which urged the local governments to have more incentive to develop local economy. Under the fiscal decentralization system, the revenue of local governments highly depends on the local economic development. Only when the local economy has a good performance, could the tax base be expanded, and revenue will be increased, so that the local governments have great incentive to develop the local economy. In addition, the growth rate of GDP and the employment situation are very important indexes for examining officials' achievements; this further strengthens the incentives of local officials to develop local economy. Thus, local governments of different levels usually play a role of entrepreneurs in promoting local economic development. The most direct, effective measure for local governments to develop local economy is to raise local investment level through various ways.

In this way, the proportion of the investment projects of local governments to national fixed investment grows continuously; the investment expenditure from local governments themselves keeps a high level. With the establishment of fiscal decentralization, the capability of local governments in controlling the revenues within budget increases remarkably, in addition, local governments have a large portion of rights in disposing the revenues both outside the budget and outside the system; this makes local governments have finance resources to invest in infrastructure construction.

In fact, in the total governmental investment, the proportion of investment within budget decreases increasingly, and that outside the budget increases increasingly, and the most of investment outside the budget is raised and used

by local governments. Moreover, in order to attract more investment from outside so as to promote the local economic development, while the revenues both within and outside the budget are insufficient for the demand of investment expenditures, some local governments take a path of raising a loan from outside to speed up the urban development. In the past years, many local governments were engaged in the so called “city management”, speeded up the city development, renewed the infrastructure in cities in large scale, and established economic developing areas. These investments take a large portion in national total investment. From above analysis we can see that local governments have been one of the main investors in China's economic life. At present, China's fixed investment has changed from that the central government plays a dominant role to that local government play a dominant role. Local governments of different levels have become an important participant in China's economic life. We must consider the effects of local government investment on economic growth.

## **2 Key Concepts and Literature Review**

### **2.1 Concepts of Government Investment**

In any society, the total investment is constituted by two parts the government investment and non-governmental investment. Government investment is a kind of government behavior which transfers capital to real assets in order to perform its function and satisfy the public demand. Government investment can fulfill the goals of development both society and economy.

#### **2.1.1 The Factors of Investment**

In an economy, what is the reasonable proportion between government and non-government? And it depends on following factors:

- a. Economic system. In general, a planned economy always relies on government investment relatively to non-government investment. Market economy usually emphasize on non-government investment.
- b. Stage of economic development. In development countries, non-government investment account a higher proportion than government investment, and in less-development countries and mid-income countries, the situation goes opposite.

#### **2.1.2 The Function of Government Investment**

Government investment plays an important macro-oriented role in the society resource distribution as an essential measure for macroeconomic regulation which can make up somewhat market failure, promoting the economy

development and optimizing economy structure. Its repercussion often most manifest in the following aspects:

a. To balance societal investment. Under the market economic condition, the government investment cannot occupy a dominate position, but it still can balance the equilibrium of totally societal investment. When the societal investment trend to expand and lead to inflation, government can decrease the amount of investment to adjust the situation of investment expansion. During a depression circumstance, the government can increase amount investment to extend societal demand.

b. To adjust the investment structure and guide the direction of societal investment. The government formulates different industrial policies which ensure the order to develop different industry due to different step of national economic development. In this case, the government can pay more attention to invest some industries which have huge societal benefits but less profit. These behaviors are beneficial to optimize investment structure and balance the proportion among different industries. In a market economy, government is not the unique investment object, even though the key projects also need non-government investment to entry these projects, but the government still plays a good demonstration and guide role. Besides the directly investment, government also can utilize several indirection measures (subsidy, tax credit and so on) to support the key industries, leading non-government investment entry these industries.

c. To create a good investment environment. To a great extent, the level of investment environment relies on the conditions of infrastructure facilities. Public facilities and societal infrastructure are not highly commercialization that means the virtuous circle of the investment input and output cannot be realized in these fields. As a result, it's a obligation for government to invest public facilities and societal infrastructure.

d. To support the national key project. Government can provide guarantee to support key project, such as financial support, labor support. The government can focus on public-benefit project, concentrating the effort on investing infrastructure projects and pillar industries, formulating policies to promote assets reorganization.

## **2.2 The definition of China's fixed asset investment**

The amount of fixed investments is the workload, expressed with currency, of activities carried out for building and buying fixed assets. It a comprehensive indicator reflecting scale, speed, proportional relationship and using direction of fixed investments. Based on economic types, fixed investments of the whole society can be divided into state-owned investment, collective investment, individual investment, joint management investment and joint-stock system

investment, foreign businessmen investment as well as Hong Kong, Macao and Taiwan businessmen investment and other fixed investments. Based on management channels, fixed investments of the whole society can be divided into four parts, namely, capital construction, transformation and renovation, real estate development investment and other fixed investments.

### **Capital construction**

Capital construction refers to those newly-built and expanded projects as well as related work that is launched by enterprises, public institutions and administrative units mainly in order to enlarge production capacity or engineering benefit. In terms of comprehensive range, it includes those capital construction projects with a total investment of over RMB 500,000 Yuan (including 500,000 Yuan, similarly hereinafter).

Specifically including:

a. those construction projects included in the central and local plan for capital construction of this year as well as those projects without having been included in the plan but to go on with construction this year in the manner of carry-over investment within the previous plan for capital construction (including making use of inventory equipment materials of capital construction) ;

b. those new projects arranged by the investment combination within the plan for capital construction and the plan for transformation and renovation of this year, those expanded projects whose new production capacity (or project efficiency) has achieved the standard of large and medium-sized projects as well as those whole factory removal projects that are aimed at changing the layout of productivity;

c. those newly-built, expanded and restored projects included neither in the plan for capital construction nor in the plan for transformation and renovation by state-owned units but whose total investment is over RMB 500,000 and those whole factory removal projects that are aimed at changing the layout of productivity as well as those projects that are launched by administrative units and public institutions to increase business buildings and by administrative units to build more welfare facilities.

### **Transformation and Renovation**

Transformation and renovation refers to the updating for fixed assets and transformation for existing technologies by enterprises and public institutions as well as the corresponding engineering and related work (excluding major repairs and maintenance engineering). In terms of comprehensive range, it includes those projects with a total investment of over RMB 500,000 Yuan.

Specifically including:

a. those transformation and renovation investors (projects) included in the central and local plan for transformation and renovation of this year as well as those projects without having been included in the plan but to go on with construction this year in the manner of carry-over investment within the previous plan for transformation and renovation;

b. those projects jointly arranged by the investment combination within the plan for transformation and renovation and the plan for capital construction of this year and aimed at transforming and upgrading the original facilities technologically and those projects that are aimed at building more major production workshops, factory branches, etc., but whose new production capacity (or project efficiency) hasn't achieved the standard of large and medium-sized projects as well as those removal projects for meeting the need of urban environmental protection and safety production;

c. those rebuilt, transformed and innovated projects included neither in the plan for capital construction nor in the plan for transformation and renovation by state-owned units but whose total investment is over RMB 500,000 and those removal projects for meeting the need of urban environmental protection and safety production.

### **Investment in Real Estate Development**

It refers to the investment in buildings and supporting service facilities that are uniformly developed by real estate development companies, commercial housing construction companies and other real estate development company legal person units as well as other units that are attached to other legal person units and actually engaged in real estate development or business activities, including agent and return for demolition dwelling houses, factories, warehouses, restaurants, hotels, resorts, office buildings, and the investment in and development projects (such as roads, water supply, water drainage, power supply, heating, communications, land grading and other infrastructure engineering) . Pure land trading activities are not included in such investment.

Other Fixed Investments

It refers to those activities for building and buying fixed assets, which are not included in capital construction, transformation and renovation and real estate development investment.

## **2.3 China's fiscal decentralized system reform**

In 1997, the Central Government started the complement reformation of finance and tax, introduced tax-sharing system national widely, and established separated finance system based on tax sharing system, this became a milestone turning from "administrative decentralization" to "economic decentralization". Under the new system, tax is divided into three

kinds: central tax, local tax and sharing tax. Central government and local government divided the responsibilities; each uses different taxes; and at the same time, many clearly and professionally divided sharing taxes are preserved. Each government could make its own budget according to its revenue and expenditure. The essence is to determine the corresponding financial power of the central government and local governments according to their power of affairs and then form a revenue system between the central government and local governments by means of dividing tax categories. It is a fiscal management system model universally implemented by market economy countries.

The first one is the division of affair power and expenditure between the central government and local governments. According to the current division of affair power, the central finance mainly undertakes the expenditure necessary for national security, diplomatic affairs and central state organ operation, the expenditure for adjusting the national economic structure, coordinating regional development and implementing macroeconomic regulation and the expenditure necessary for the development of social undertakings directly controlled by the central authorities. Local finance mainly bears the expenditure necessary for the operation of the local government bodies and the expenditure necessary for the development of the local economy and social undertakings.

The second one is the division of revenue between the central government and local governments. Based on the principle of combining affair power and financial power, the central revenue and local revenue are divided according to tax categories. Those categories necessary for maintaining national rights and implementing macroeconomic are classified into central tax; those major categories directly related to economic development into shared tax of the central government and local governments; and those suitable for local collection into local tax which can enrich local tax types and increasing the revenue of local tax. Two sets of tax agencies, central and local, are established. The central tax office collects central tax and shared tax while local tax agencies collect local tax.

The third one is the intergovernmental fiscal transfer payment system. On the basis of re-dividing central revenue and local revenue, the system of tax distribution has adjusted the intergovernmental fiscal transfer payment quantity and form. In addition to retaining fixed subsidies by the central government for local finance under the original system, special subsidies and local tax delivery, more attention has been paid to establishing the tax return system of the central government to local governments according to the new situation of broadened revenue scope and more quantities. Specifically, when central tax has been turned over, the central government returns a part of



revenue to local government for use through central financial expenditure.

The last one is budgeting and scheduling. After the system of tax distribution has been implemented, both the central government and local governments are required to prepare their budget in accordance with the new requirements. At the same time, the amount of the central tax returns shall be deducted from the original local delivery and then a “capital scheduling proportion” shall be verified based on the proportion that the net amount after deduction accounts for the estimated consumption tax and VAT of that year. Based on the proportion, the national treasury will appropriate consumption tax and the central government will share VAT with local governments.

## **2.4 Local government debt**

Local government debt is the public debt which issued by local government which pledged by governmental credit. It's a kind of fiscal measure to raise funds for local government to plan, manage, and arrange, and these funds are listed in local fiscal budget. In nowadays China, there are 4 main kinds of local government debt as following:

### **a. International debt**

It means local government applies loan to invest to some infrastructure projects from foreign governments and fiscal organizations through local international trust and investment companies, and it is guaranteed by local fiscal income.

### **b. Fiscal debt**

When the fiscal budget of local government is unbalanced, and still has to increase expenditure, China's local government always applies loan from higher level government to fulfill the demand, and settling the debt by next few years' fiscal income.

### **c. Business debt**

In order to fulfill the demand of local infrastructure and public utility construction, the local government or the fiscal investment organizations which belong to the local government borrow funds directly from domestic policy banks and commercial banks.

### **d. Raising-funds debt**

This kind of debt means the local state-own fiscal investment firms use the government credit as guarantee to attract the social idle capital, forming local government debt.

## **2.5 Literature Review**

A World Bank report[2] points out that though China has a single governmental system, China's system has a strong character of federalism because China's finance system is highly decentralized on so many different levels as Central Government, 31 provinces, 331 cities, 2,109 counties and 44,741 towns, therefore. Qian Yingyi and Weingast[3] regard this federalism of China, which formed from fiscal decentralization, as market preserving federalism with Chinese character. Qian Yingyi and Roland[4] point out that the incentive of government to subsidize inefficient projects is determined by the tradeoff between political interests and economic costs, and the economic costs depend upon the degree of governmental decentralization. They insist that, with the free movement of nonstate-owned capitals, fiscal decentralization has the effect of hardening the budget restriction of the state-owned enterprises controlled by local governments. This is because that the competition of attracting investment of local governments may generate externalities. This makes the opportunity cost of subsidizing the inefficient state-owned enterprises to be high, therefore weakens the incentive of local government to save losing enterprises. They also believe that such government organizational reformation as fiscal decentralization is an important aspect for the transition from planning economy to marketing economy. Lin Yifu and Liu Zhiqiang[5], employing provincial data, assessed the effects of China's fiscal decentralization started from 1990s on the economic growth. They found that, after controlling the effects of other reforms occurred at the same time, fiscal decentralization raises the provincial GDP growth rate in per capita aspect, this shows that fiscal decentralization promotes economic growth through raising the efficiency of resource distribution. They believe that the positive effects of fiscal decentralization on economic development are due to that, relative to central government, the provincial governments have information advantage in satisfying local demand; thus, they could provide better public goods and services which have large effects on local economic environment. Zhang Weiying and Su Shuhe[6] argue that the decentralization happening in the early of 1980s led to regional competition which led to privatization. The establishment of decentralized system accelerates the incentive of local governments to pursue profit, which causes the high competition between local governments, which facilitates the market oriented movement of the whole economy. Due to the intense regional competition in the product market, each region has to make efforts to decrease its production cost so as to occupy a space in the market competition. In order to effectively cut the cost, local governments make such choice as giving the whole or part of share to managers to give them incentives, which accelerates the growth of investment and economic development.

There are also some writers who have noted the negative effects of local government investing behavior. As to the aspect of reducing the efficiency of social resources distribution, Lu Ming, Chen Zhao and Yan Ji [7]who take the

angle of the isolation of regional economy, Xu Ying [8] who take the angle of conflict of regional economy, Hu Rongtao, Zhang Xuying and Su Mingbing [9] who take the angle of the similarization of industrial structure, with game theory, have respectively analyzed the strategic behavior of local governments pursuing self-profit which led to the loss of social resources distribution efficiency. The Research Group of “The Competition of Chinese Local Governments” analyzed the negative performance of local government in competition, and indirectly showed the negative effects of local governments investing behavior on economic growth and employment with the insight that local protectionism blocked the basic regulation effect of market mechanism on the resources distribution and use, that the local governments only pursued economic interests but ignored the social interests and resulted the environment is worsen, and that the land sell price was so low, even free, that land resource was over and inefficiently used.

### **3 Methodologies**

As a descriptive research, this article introduces the concepts of government investment, China's fixed asset investment, fiscal decentralization system reform, local government debt and Saving-Investment curve, describes the status quo of China's government investment. The research also focuses on find out the reasons lead to this phenomenon and utilizes some relevant concepts and theories of macroeconomic to indentify the negative impacts and challenges on China's economy. At last, it tries to raise some suggestions to resolve this issue.

Information, knowledge and data used in this report are collected in the following methods. The knowledge and concepts which used in literature review chapter and those related with China's government investment are derived from recent books, articles and government websites, it need to mentioned that some information used are translated from the original papers that written by Chinese. Almost of data and information used related with government investment and fixed asset investment are derived from the annual books of China's Financial Ministry, China's Development and Reform Commission and China's National Statistic Bureau. All introduction and analysis regard to excessive investment issues are based on the investigation and research of China's economy run. Field works were carried out in ways of archives checking, interviews with related departments in the database online searching etc.

## 4 Analyses and Design

### 4.1 The analysis of the Scale of China's government-oriented investment

Table 1. The annual GDP growth (1997-2011)

Year	Annual % GDP Growth
1997	9.3
1998	7.8
1999	7.6
2000	8.4
2001	8.3
2002	9.1
2003	10.0
2004	11.1
2005	10.2
2006	11.6
2007	11.9
2008	9.0
2009	9.1
2010	10.3
2011	9.2

China's economy growth declined after Southeast Asian financial crisis in 1997 and Subprime mortgage crisis in 2008. But in general, between 1997 and 2011, the average GDP growth is 9.5%. This is attributable to several reasons. First, the recovery of the world economy, and China's accession to the WTO in 2001 provided a favorable external environment for the recovery of the export growth. Second, increases in the number of private enterprises became a new driving force for the growth of the Chinese economy. In addition, in many heavy industrial sectors, including steel and chemical products, private capital witness rapid expansion.

Before 1997, the purpose of the low interest rate policy was mainly to protect the state run enterprises. However, from 1997, maintaining low interest rates became an important policy means to stimulate GDP growth. During 1997-2003, the interest rate was kept at a positive because the economy was experiencing deflation. After that, from 2003 to now, although prices increased at a fast pace, interest rates were still kept at a low level and became negative as a result. In the housing market, combined with high growth and a high saving rate, low interest rates further encouraged the expansion of bubble. As for investment, the low interest rates reduced capital costs, and exaggerated investment returns, contributing to government investment.

Usually two types of indicators were reflected the scale of the investment, one is total investment in fixed asset of the whole society. Another is investment rate which reflects the ratio of total fixed asset investment share of GDP over the same period in the whole society.

Table 2. The comparative between government investment rate and residential consumption rate

<b>Year</b>	<b>Total government investment rate</b>	<b>Residential consumption/GDP</b>
1997	34.1	45.3
1998	36.9	45.3
1999	37.1	46.1
2000	37.3	46.4
2001	38.9	45.2
2002	41.9	43.7
2003	47.6	41.7
2004	37.7	39.8
2005	48.6	38.0
2006	52.5	34.2
2007	53.6	30.7
2008	54.1	34.1
2009	70.1	35.9

2010	47.8	34.1
2011	47.0	36.8

Accompanying this new round of high growth was rapid growth in fixed asset investment. The proportion of fixed assets investment in GDP reached a record high level during these years. As table 2 shows, during 1997 -2011, the average annual growth rate of the investment rate exceed 25 percent, with the investment rate increasing from 34.1 percent in 1997 to 47 percent in 2011. While the investment rate rose continuously, there was a persistent decline of residential consumption as a share of GDP, decreasing from 45.3 percent to 36.8 percent from 1997 to 2011, that means residential consumption as a portion of GDP was 8.5 percentage points lower than the fixed assets investment rate in 2011.

Accompanying this new round of high growth was rapid growth in fixed asset investment. The proportion of fixed assets investment in GDP reached a record high level during these years. As table 2 shows, during 1997 -2011, the average annual growth rate of the investment rate exceed 25 percent, with the investment rate increasing from 34.1 percent in 1997 to 47 percent in 2011. While the investment rate rose continuously, there was a persistent decline of residential consumption as a share of GDP, decreasing from 45.3 percent to 36.8 percent from 1997 to 2011, that means residential consumption as a portion of GDP was 8.5 percentage points lower than the fixed assets investment rate in 2011.

Figure 1. China's government investment (1997-2011)

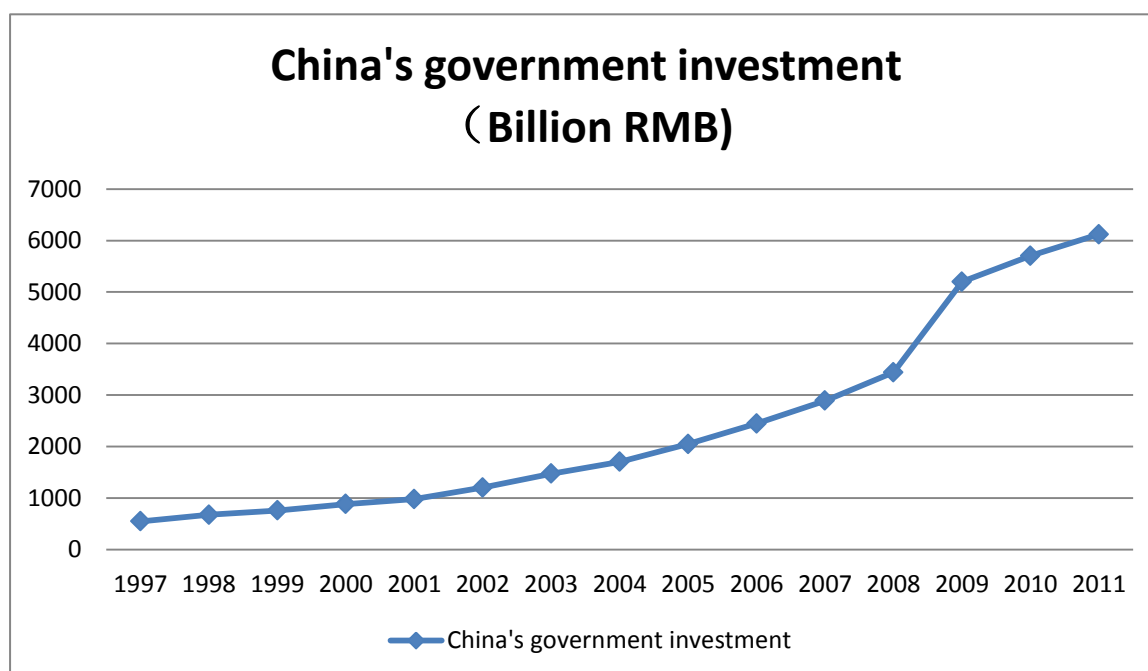
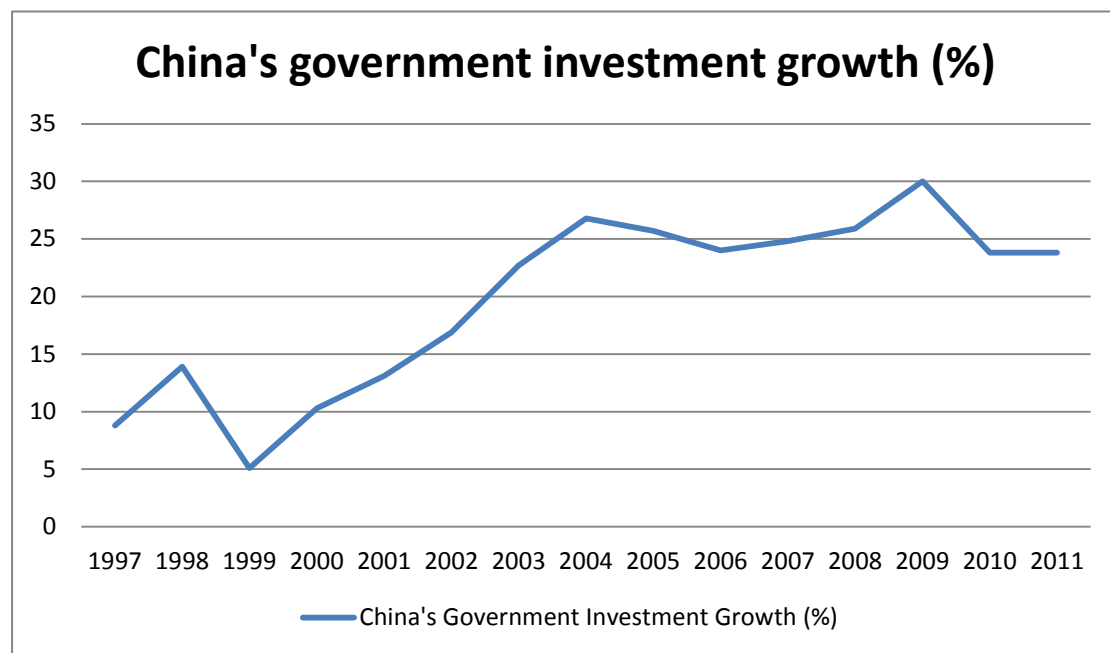


Figure 2. China's government investment growth



Source: China's National Statistic Bureau Annual Book

Notes: The figures in table 1 is real terms, fugue 2, 3, 4 are nominal terms.

Table 3. Local government investment share the proportion of total government investment and total investment

Year	Local government investment/Total government investment %	Local government investment/Total investment %
1997	51.2	19.8
1998	55.6	25.3
1999	60.7	29.9
2000	60.4	30
2001	60.4	32.8
2002	51.1	39.6
2003	62.7	34.7
2004	63.5	35.7
2005	71.1	39.3
2006	78.9	46.3

2007	79.9	47.8
2008	81.6	59.2
2009	94.1	72.9
2010	86.3	66.4
2011	84.2	65.2

Source: China's National Statistic Bureau Annual Book

From Table 4 and Table 5 we can see that, after the establishment of tax-sharing system, the proportion of local government investment to GDP tends to rise. This shows that after the establishment of tax sharing system, the local government investment is strengthened for the following reasons: after the establishment of tax-sharing system, while the revenue of central government increases remarkably, the local government's power to finance has not been expanded correspondingly, and has been even shrunken, but at the same time, the responsibility of local governments is expanded; this problem is worse at county and town level. For local governments, the only way to gain more finance and to satisfy the demand of fiscal expenditure is to develop the local economy and to enlarge the total economy, so this makes the local governments have great incentive to develop the local economy, and the one of important measures of doing so is to attract more and more investment from outside. However, attracting investment needs a good investment environment. This is why local governments increased investment in infrastructure construction and established a great deal of economic and technological developing areas. A direct result of this practice is that the proportion of local government investment to GDP rises increasingly after the establishment of tax-sharing system.

The proportion of local government investment to GDP speeded up its increase after 1998. We ascribe this to that after 1998, China had a positive fiscal policy and increased the investment in infrastructure constructions, which greatly aroused the enthusiasm of local governments to be engaged in city infrastructure constructions with the simulation of central government loan. Many projects supported by the central government loan required local government to provide some auxiliary capital too, so the local governments who have won government loan project had to get its auxiliary capital through bank loan and other ways. It evidently stimulated investment expenditure of local governments; in addition, for some local governments who is qualified, the providence of auxiliary capital means great possibility of winning the support of central government loan, which in great degree stimulated these local governments to strive for this kind of loan, because for local governments, the central government loan is free, and what they need to do is to raise the



auxiliary capital. This stimulated the investment expenditure of local governments. This is attributed to the following factor: (a) expansive fiscal policy enacted by central government; (b) the growth strategy of local government stressing domestic demand; (c) rapid expansion in local government fiscal revenue.

## 4.2. The analysis of the portfolio of China's government-oriented investment

Investment portfolio refers to the proportion of various assets in total investment in a particular period of time. Government investment portfolio refers to the proportion of various assets in total government investment in a particular period of time. To investigate this issue from different angles and at different levels, the investment portfolio can be divided by regional type, industrial type and purpose type. This article will analyze government investment in these three types of structure.

### 4.21 Analysis of Regional Portfolio

Table 4. Regional portfolio in 2011 (Unit: Billion RMB)

Eastern Economy Region	Per Capita Government Investment	6682.7
	The Proportion of Total Investment	38.83%
Middle Economy Region	Per Capita Government Investment	5798.4
	The Proportion of Total Investment	33.52%
Western Economy Region	Per Capita Government Investment	3997.3
	The Proportion of Total Investment	23.71%

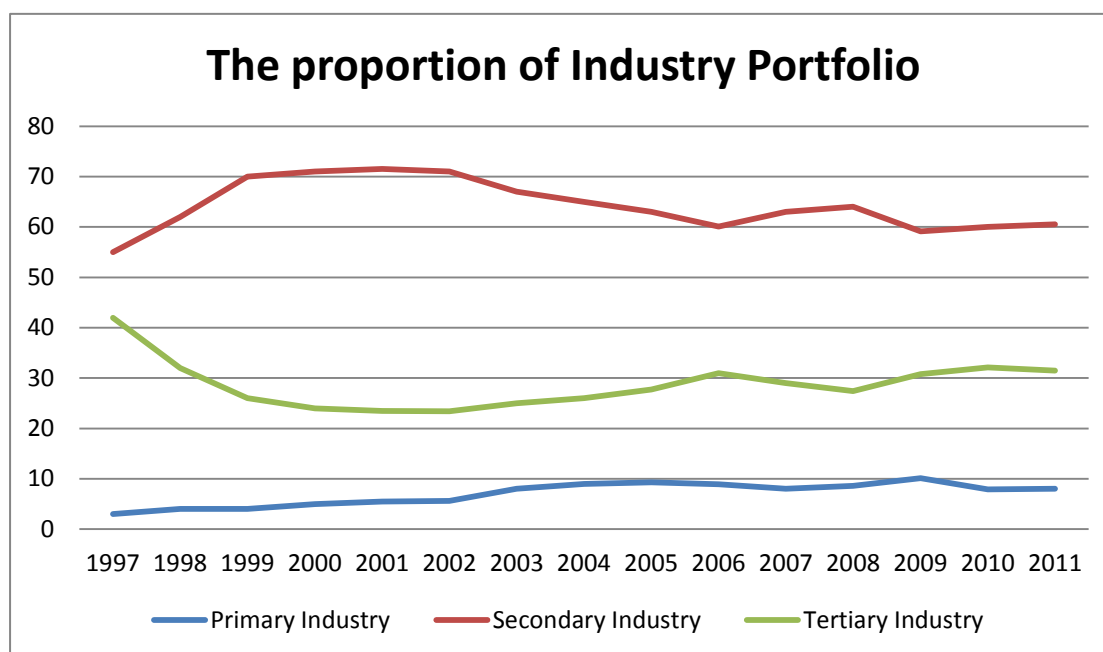
Source: China's National Statistic Bureau Annual Book

According to Table 5, eastern economy region is higher than middle and western region in both indexes. That demonstrates the gross government investment and the growth rate in eastern economy region far exceed middle and western region because the policy give priority to the development of the southeast coastal areas from the Opening up Reform in 1979.

### 4.22 Analysis of Industrial Portfolio

Investment industrial structure refers to the proportion of investment in different industries and sections. Since the founding of PRC, the government investment highly tilts to second industry, especially heavy industry, compressing the primary industry. This situation leads to the heavy industry developed rapidly and suppresses agriculture and tertiary industry.

Figure 3. The Proportion of Industry Portfolio (%)



Source: China's National Statistic Bureau Annual Book

According the diagram, the investment percentage of the tertiary industry has dropped markedly, and secondary industry growth rapidly in 1997 and 1998, but the proportion of agriculture still at a low level fewer than 10 percent.

#### 4.23 Analysis of purpose Portfolio

Government investment can be divided into investment in infrastructure investment, renovation investment and real estate investment by different purposes.

Table 5. The Proportion of Portfolio (%)

Year	Infrastructure Investment (%)	Renovation Investment (%)	Real Estate Investment (%)
1997	55.24	19.11	25.65
1998	55.25	19.09	25.66
1999	58.38	18.59	23.03
2000	56.28	20.11	23.61
2001	57.53	19.70	22.77
2002	58.40	17.21	24.39
2003	60.56	15.64	23.80
2004	61.66	17.01	21.33
2005	62.01	16.89	21.11

2006	63.11	19.11	17.78
2007	59.09	20.67	20.24
2008	59.15	20.88	19.97
2009	60.88	19.34	19.78
2010	63.57	19.01	17.42
2011	62.14	18.99	18.87

Source: China's National Statistic Bureau Annual Book

As a developing country, it's essential for China's government to incline toward infrastructure facilities to fulfill the demand of rapid economy growth. According Table 7, the infrastructure accounts 50-60 percent of totally investment.

When an economy evolves to a certain degree, its development pattern needs to transfer into intensive economic development that focuses on efficiency improvement. As of this point, the TFP (Total Factor Productivity) will be all the more important to economic growth and the needs for technological advancement and innovation will be more imperative. Thus, investments in fixed assets must give way to the renewal and Renovation investments and the scale and proportion of the latter must be amplified in order to adapt to the requirement of economic growth.

The main driving forces pushing this high growth in fixed asset investment came from investment in manufacturing industries, infrastructure and real estate. In 2011, the proportions of investment in these areas in total investment and GDP reached 72 and 38 percent. Especially, infrastructure and real estate investment account for more than half of the total investment and over 25 percent of GDP (National Statistic Bureau).

#### **4.3 The econometric model and variable explanation of effects of government investment on economic growth**

The economic growth model uses Cobb-Douglas production function, and introduces variables of human capital and government investment on the base of the production function of labor and capital according Song HY and Qin D's research on the efficiency of government investment [1], it is shown as below:

$$Y = AK^{\alpha}L^{\beta}H^{\gamma}G^{\varnothing}$$

Where Y is GDP, K is material capital stock, L is labor, H is human capital stock, and G is the investment expenditure of local government. By standardizing the above equation by logarithm, we get:

$$\ln Y = \ln A + \alpha \ln K + \beta \ln L + \gamma \ln H + \varnothing \ln G$$

With the above equation, we get the following econometric analysis model based on standard panel data:

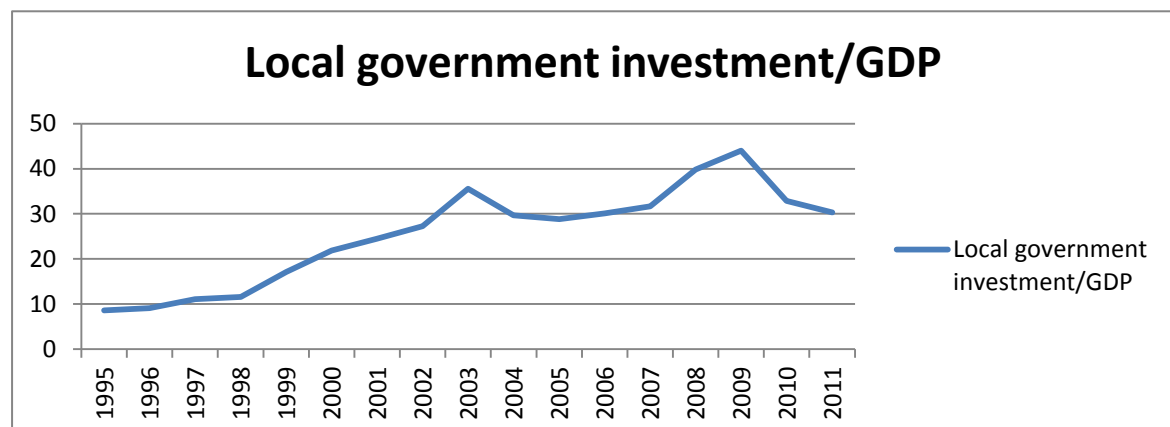
$$\ln Y_{i,t} = \beta_0 + \beta_1 \ln K_{i,t} + \beta_2 \ln L_{i,t} + \beta_3 \ln H_{i,t} + \beta_4 \ln G_{i,t} + \alpha_i$$

Where  $i$  is province  $i$ ,  $t$  is year,  $\alpha_i$  is unobserved variable related with particular unit. For panel data, as  $\alpha_i$  is unobserved variable, and it may be related with explanatory variable, so normal OLS regression will cause estimation deviation and error of the explanatory variable coefficient. When variable  $\alpha_i$ , related with particular province, does not change with time, the normal estimation method is to estimate after deducting mean for all the variables, thus we get fixed effect model. If  $\alpha_i$  is not related with explanatory variable, we can use random effect model which is more effective than fixed effect model. If the estimation result of the two models is evidently different, it shows that  $\alpha_i$  is correlated with explanatory variable, then both of the two models can get the same estimation result, but random effect model is more effective, so the fixed effect model should be rejected.

#### 4.31 The econometric model of the effects of local government investment on economic growth after considering the tax-sharing system established in 1997

In 1997, the Central Government started the complement reformation of finance and tax, introduced tax-sharing system national widely, and established separated finance system based on tax-sharing system. The following figure reflects the proportion of provincial government investment to GDP in the years of 1995-2011. From this figure we can see that, after the establishment of tax-sharing system, the proportion of local government investment to GDP tends to rise.

Figure 4. Local government investment/GDP



Source: China's National Statistic Bureau Annual Book

This shows that after the establishment of tax-sharing system, the local government investment is strengthened for the following reasons: after the establishment of tax-sharing system, while the revenue of central government increases remarkably, the local government's power to finance has not been expanded correspondingly, and has been even shrunken, but at the same time, the responsibility of local governments is expanded; this problem is worse at county and town level.

For local governments, the only way to gain more finance and to satisfy the demand of fiscal expenditure is to develop the local economy and to enlarge the total economy, so this makes the local governments have great incentive to develop the local economy, and the one of important measures of doing so is to attract more and more investment from outside. However, attracting investment needs a good investment environment. This is why local governments increased investment in infrastructure construction and established a great deal of economic and technological developing areas. A direct result of this practice is that the proportion of local government investment to GDP rises increasingly after the establishment of tax-sharing system. With the above consideration, we add a new variable  $\text{dummyt97} * \ln G$  into the econometric model, among which  $\text{dummyt97}$  is dummy variable of time; the corresponding  $\text{dummyt97}$  value for the periods of 1995-1996 and 1997-2011 are 0 and 1 respectively. Variable  $\text{dummyt97} * \ln G$  examines what new effects on economic growth have been produced by local government investment after the establishment of tax-sharing system. The econometric model we need to test turns into the following:

$$\ln Y_{i,t} = \beta_0 + \beta_1 \ln K_{i,t} + \beta_2 \ln L_{i,t} + \beta_3 \ln H_{i,t} + \beta_4 \ln G_{i,t} + \beta_5 \text{dummyt97} * \ln G_{i,t} + \alpha_i \quad (1)$$

#### **4.32 Econometric model of the effects of local government investment on economic growth after considering that the establishment of finance policy in 2000 made the local governments to have more incentive to invest in infrastructure construction**

From Table 8, we can see that the proportion of local government investment to GDP speeded up its increase after 2000. We ascribe this to that after 2000, China had a positive fiscal policy and increased the investment in infrastructure constructions and entry WTO, which greatly aroused the enthusiasm of local governments to be engaged in city infrastructure constructions with the simulation of central government loan. Many projects supported by the central government loan required local government to provide some auxiliary capital too, so the local governments who have won government loan project had to get its auxiliary capital through bank loan and other ways.

It evidently stimulated investment expenditure of local governments; in addition, for some local governments who is qualified, the providence of auxiliary capital means great possibility of winning the support of central government loan, which in great degree stimulated these local governments to strive for this kind of loan, because for local governments, the central government loan is free, and what they need to do is to raise the auxiliary capital. This stimulated the investment expenditure of local governments. Under the above consideration, we add a new variable  $\text{dummyt00} * \ln G$  in the basic econometric model, among which  $\text{dummyt00}$  is dummy variable of time, the  $\text{dummyt98}$  value for the period of 1995-1999 and 2000-2011 is 0 and 1 respectively. What the variable  $\text{dummyt98} * \ln G$  examines is that, after the new positive fiscal policy practiced in 1998, local governments had more incentive to be engaged in infrastructure construction. It made the proportion of local government investment to GDP increase more quickly. What are the new effects of local government investment on economic growth in this circumstance? Our econometric model to be tested becomes as follows:

$$\ln Y_{i,t} = \beta_0 + \beta_1 \ln K_{i,t} + \beta_2 \ln L_{i,t} + \beta_3 \ln H_{i,t} + \beta_4 \ln G_{i,t} + \beta_5 \text{dummyt00} * \ln G_{i,t} + \alpha_i \quad (2)$$

#### 4.33 Variable explanation

a. Y is explanatory variable. It indicates GDP of different provinces. The data here comes from China Statistical Yearbook of relevant years.

b. G is the investment expenditure of local governments. It indicates the local government investment within the budget, which is the fiscal expenditure after deducting the administrative expenditure used in science, education, culture and health care. Because there is not a index to show government investment, and all the government expenditures after deducting the administrative expenditure used in science, education, culture and health care are basically government investment, so we regard the part of government fiscal expenditures within budget after deducting the administrative expenditure used in science, education, culture and health care to be a representation variable of local government investment and used in the econometric model.

c. K is the capital stock of provinces. It is converted through book inventory system d. The capital stock data of different provinces in 1995-2011 used in this paper are directly from the study of Zhang Jun, Wu Guiying and Zhang Jipeng [11]. The capital stock data of different provinces in 2011 are calculated by the authors using the above method.

d. H is the human capital stock of different provinces. The human capital stock data of different provinces are not available in any China Statistical Yearbook. However, some studies attempted to calculate this kind of data based on the

existing statistical data, so as to provide help for econometric studies, among which is Jin Yu, Lu Ming and Chen Zhao [12]. The human capital stock data used in this paper are directly from their studies.

We used the data of average education years in different provinces which were calculated by them, and based on which we calculated the total education years, thus we got the human capital stock of different province, then introduced them into the econometric model through logarithmic calculation.

## 4.4 Data and Empirical Results

### 4.41 Data

Due to consider of development level, the data used in this paper is relevant economic indexes in the year of 1995-2011 of Guangdong province, Jiangxi Province and Ningxia Hui Autonomous Region and these data are calculated by current price. These three province-level region represent developed region, intermediate level and underdeveloped region. Except dummy variables, all other variables are converted to be standard value with corresponding price index. We process these data with Excel, Eviews6.

Table 6 Y: GDP (100 Million RMB)

<b>Years</b>	<b>Guangdong</b>	<b>Jiangxi</b>	<b>Ningxia</b>
1995	5933.05	1169.73	269.75
1996	6834.97	1605.74	293.62
1997	7774.53	1605.77	310.92
1998	8530.88	1719.87	327.46
1999	9250.68	1853.6	341.49
2000	10741.25	2023.07	365.57
2001	12039.25	2191.4	398.38
2002	13502.42	2468.68	429.28
2003	15844.64	2844.8	485.34
2004	18864.62	3495.9	537.11
2005	22557.37	4056.76	612.61
2006	26587.76	4670.53	725.90
2007	31777.01	5500.25	919.11
2008	36796.71	6480.33	1203.92
2009	39482.56	7655.18	1353.31
2010	46013.06	9451.26	1689.65
2011	53210.28	11583.8	2102.21

Table 7 G: investment expenditure of local governments (100 Million yuan)

<b>Years</b>	<b>Guangdong</b>	<b>Jiangxi</b>	<b>Ningxia</b>
1995	2327.22	282.54	62.17

1996	2327.64	317.32	72.1
1997	2298.14	329.45	85.84
1998	2668.13	400.6	106.75
1999	3027.56	454.44	128.1
2000	3233.70	516.08	157.52
2001	3536.41	631.84	191.08
2002	3970.69	889.04	226.98
2003	5030.57	1303.22	317.99
2004	6025.53	1713.2	376.2
2005	7164.11	2176.6	443.3
2006	8132.37	2683.6	498.7
2007	9596.95	3301.9	599.8
2008	11165.06	4738.6	828.7
2009	13353.15	5643.14	1353.31
2010	16113.19	6772.27	1464.7
2011	16843.83	7583.8	1654.15

Table 8 Population (10 thousands)

<b>Years</b>	<b>Guangdong</b>	<b>Jiangxi</b>	<b>Ningxia</b>
1995	6788.74	4062.54	512.38
1996	6896.77	4105.46	519.23
1997	7013.73	4150.33	522.94
1998	7115.65	4191.21	533.78
1999	7298.88	4231.17	543.29
2000	7498.54	4148.54	554.32
2001	7565.33	4185.77	563.22
2002	7649.29	4222.43	566.78
2003	7723.42	4254.23	570.19
2004	7804.75	4283.57	578.12
2005	7899.64	4311.24	583.33
2006	8048.71	4339.13	598.72
2007	8156.05	4368.41	591.98
2008	8267.09	4401.56	612.98
2009	8365.98	4441.88	620.11
2010	8521.55	4456.75	630.14
2011	8637.19	4439.21	647.19

Table 6-Table 8 Sources: China's National Statistic Bureau Annual Book

Table 9 K: capital stock (100 million RMB)

<b>Years</b>	<b>Guangdong</b>	<b>Jiangxi</b>	<b>Ningxia</b>
1995	7881	1637	251. 45
1996	9410	1709	363. 58
1997	13919	1797	477. 42



1998	14485	1889	595.34
1999	15062	1987	618.07
2000	16084	11090	845.57
2001	16342	11214	1379.52
2002	17148	11395	1319.75
2003	18158	11640	1377.37
2004	19284	11935	1442.10
2005	20704	12279	1515.81
2006	22305	12673	1599.49
2007	24135	13105	1697.57
2008	26005	13558	1825.53
2009	31355	14211	2224.11
2010	38571	20981	3410.14
2011	39647	21943	3647.19

Table 10 H: human capital stock (here are part of data, more data can download from [www.essrc.org/luming](http://www.essrc.org/luming))

	The proportion of higher educated population (%)				The proportion of high educated population (%)			
Province	1995	2001	2006	2011	1995	2001	2006	2011
GuangDong	1.93	7.5	21.61	37.66	40.49	50.44	61.77	69.76
JinagXi	1.33	5.63	18.76	35.75	35.75	44.3	53.11	64.41
NingXia	2.43	7.63	17.98	33.95	36.48	39.48	49.98	56.73
	The average educated level (Years)							
Province	1995	2001	2006	2011				
GuangDong	6.93	8.23	9.11	10.71				
JinagXi	6.48	7.75	8.76	10.11				
NingXia	6.13	7.21	7.98	9.34				

Table 9-10 Sources: Zhang J, Wu GY, Zhang JP. The estimation of China's provincial capital stock: 1952-2011. Economic Research Journal, 2011, (10): 35-44 (in Chinese)

#### 4.42 Empirical Results

Thus the original assumption that there is a random effect is declined; therefore, we need to use fixed effects model when testing the econometric equation empirically. The empirical test result is as the following table. This shows that the local government investments have remarkable effects on economic growth, and that the elasticity of local government investment to economic growth is about 0.34. We can also see that the regression coefficient of the variable  $\text{dummyt97} \cdot \ln G$  is 0.0389, that the statistical value of  $t$  is 8.89, and that the corresponding value is very little. This shows that, after the establishment of tax-sharing system in 1997, the efficiency of local

government investment was rising, and its elasticity to economic growth was about 0.04. Moreover, we can also see that the total employment level, capital and human capital have remarkable positive effects on economic growth, and that the production elasticity of employment, capital and human capital is about 0.95, 0.52, and 1.08 respectively (Table 11).

Table 11

Dependent Variable: Y				
Method: Least Squares				
Date: 06/12/13 Time: 10:44				
Sample: 1995 2011				
Included observations: 17				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-15.83777	1.004542	-15.76616	0.0000
ING	0.341894	0.031051	11.01089	0.0000
INL	0.947279	0.092868	10.20027	0.0000
INK	0.519377	0.045598	11.39029	0.0000
INH	1.077111	0.122246	8.811047	0.0000
ING97	0.038941	0.004381	8.888333	0.0000
R-squared	0.992331	Mean dependent var	41.39987	
Adjusted R-squared	0.998469	S.D. dependent var	30.56554	
S.E. of regression	322.8574	Akaike info criterion	14.66286	
Sum squared resid	1146606.	Schwarz criterion	14.95694	
Log likelihood	-118.6343	Hannan-Quinn criter.	14.69209	
F-statistic	28.46620	Durbin-Watson stat	2.238067	
Prob(F-statistic)	0.000000			

Table 12

Dependent Variable: Y				
Method: Least Squares				
Date: 06/12/13 Time: 11:54				
Sample: 1995 2011				
Included observations: 17				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-15.28864	1.019418	-14.99742	0.0000
ING	0.495569	0.036019	13.75870	0.0000
INL	0.712926	0.097325	7.325197	0.0000
INK	0.644237	0.042694	15.08976	0.0000
INH	1.058597	0.114756	9.224744	0.0000
ING00	-0.032704	0.003765	-8.685325	0.0000
R-squared	0.992331	Mean dependent var	41.39987	
Adjusted R-squared	0.998626	S.D. dependent var	30.56554	
S.E. of regression	322.8574	Akaike info criterion	14.66286	
Sum squared resid	1146606.	Schwarz criterion	14.95694	
Log likelihood	-118.6343	Hannan-Quinn criter.	14.69209	
F-statistic	28.46620	Durbin-Watson stat	2.238067	
Prob(F-statistic)	0.000000			

The fixed effect estimation result to econometric Equation (2) is as Table 12. From Table 2 we can see that the regression coefficient of the variable  $dummyt00 * \ln G$  is -0.0327. Its statistical value is -8.6853, and its corresponding probability value is very little. It shows that the elasticity of local government investment to economic growth after 2000 declined about 0.033 compared with that of 2000, which means that with 1% of local government investment, the growth of GDP was only about 0.466%. It shows that, after China practiced a new positive fiscal policy, though local governments had great incentive to

invest in city infrastructure construction with the impetus of central government loan, which made the investment expenditure of local government and its proportion to GDP are increasing, the efficiency of these investment declined. It can be shown with the 0.033% declination of its elasticity to economic growth.

#### **4.43 The analysis of Empirical Results**

The empirical result of this paper shows that the local government investment has a very evident positive effect on economic growth. The empirical result also proves that after the establishment of the tax-sharing system in 1997, the elasticity of local government investment to economic growth went up. But this elasticity went down when local government investment increased greatly after 2000. The empirical test result also shows that the elasticity of local government investment to employment decreased when the tax-sharing system reform was put into practice after 1997. It shows that though the local government investment increased rapidly in the past years and played an important role in economic development, its positive effect on employment was limited. This explains why the elasticity of GDP to employment tends to decrease and the employment pressure keeps high while China's economy keeps rapid growth.

### **5 Finding and Discussion**

#### **5.1 The roles of local government after fiscal decentralization reform**

One of the most important future of China's economy transformation is the local government plays a key role in the promotion of economy development. The process of economy transformation can be ascribed as central government planned economy transit to local government oriented economy as mentioned before. In nowadays China, enhancing autonomous development ability promote local government to be the economic main body because the local government has relatively independence economic interests. Under this situation, the local authorities take measures to extend the local investment which contains two forms: as a part of local demand to promote GDP growth and invest infrastructure facilities due to create a better circumstance to attract private investment. In the foreseeable future, the trend that local government increase fixed asset investment to promote economy growth will be more and more obvious.

At the beginning of opening up reform, the investment from central government is relatively more than local government. In that time, local government just maintains the normal running, focus on resolving the problem of food and

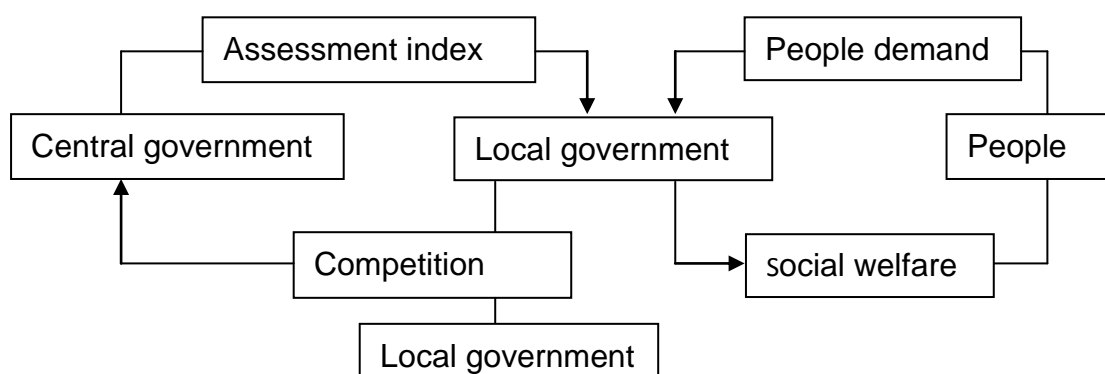
clothing, lacking capacity and motility to invest infrastructure facilities and other fixed asset. Fiscal decentralization reform has motivated the local government to great extend and brought about speedy growth of fixed asset investment. At the same time, central government just gets permission to use some parts of national funds to invest infrastructure facilities and most focus on a number of key infrastructure projects of nationwide significant. Because the investment from central government has this kind of strong external characteristics, the demand of infrastructure cannot fulfill without local government.

In such situation, there are three reasons to promote local government strength infrastructure facilities. Firstly, it's essential to invest infrastructure facilities both for economy growth and improvement in people living standard. The past experience shows that better infrastructure facilities will attract more FDI or domestic private investment to promote local development. Secondly, China's central government always counts on increasing investment to stimulate economy in an economy recession. The local government can catch this opportunity to extend fixed asset investment. Last one, to investment education, medical care, social security is not able to take effect in a short term. Consequently, to invest infrastructure facilities is a rational choice for local government than other options. But in usual, the expenditure of investment for people's lives is rigid demand, local government always lack of funds to invest infrastructure facilities. In order to achieve the goal of economy growth, the financing of many infrastructure projects often disregard law and regulation when central government limited the investment scope or local government lack of normal financing channel.

## 5.11 The intrinsic mechanism of local government investment

Why the local governments intent on infrastructure? In order to understand such behavior, we have to analyze how the local government to generate investment and describe the internal system of local government investment. In nowadays China, the local government's interest is intertwined with interests of the central government and local people, as the illustration showed.

Figure 5. The internal system of local government investment



This illustration contains following parts. (a) The interest relationship between local government and central government. (b) The interest relationship between local government and the people in this area. (c) The interest relationship between different local governments. As for analyzing the behavior of local governments, the comprehensive surveys of the three are an indivisible whole which is indispensable.

The entrust-agent relationship between central government and local government are based on the framework of political centralization and fiscal decentralization. In this system, superior administration organization set targets and allot tasks to lower administration organization which are required in a particularly time.

In order to fulfill the assessment index from central government, the local government has to mobilize and organize various sources. In political centralized China, the local government officials are filled by appointment from higher-level government rather than popular election and the political incentives and rule mode under this system not lead to “responsible to the electorates” but “responsible to the political leaders”. That means the local government gets the benefits of fiscal decentralization, and in the meanwhile, they must obey the authority of the central government and maintain the unity of purpose with central government. There is a very popular word to summarize the value orientation of China’s government officials called “Political achievement view” that reflects the solidified interests between the assessment from the central government and promotion of local economy. To boost the fixed asset investment is a perfect choice to achieve the both goals of central government and local government. From economy development angle, local government fixed asset investment can promote the growth of local GDP to increase the local fiscal revenue, extending the margin financial domination authority of local government officials. Besides that, this issue also can be considered on the local government official personal angle, they can get more advance opportunities through the central government’s assessment. In this sense, the local government is quite agreeable to extend fixed assets investment to boost the economy.

Usually, the economic competition among different local governments is around the officials’ political advance. To a certain degree, the growth of China’s GDP is the product of this mechanism. So far as local government is concerned, one important strategy to win this kind of competition for them to boost local economy growth is attracting investments, especially foreign direct investment, and this behavior requires local government officials focus on improving local infrastructure facilities to enhance the competitiveness to attract more and more investment. Hereby, investments, whatever foreign direct investment or domestic private investment, are the important motive

force in government fixed asset investment.

## **5.12 The characteristics of China's local government investment**

**a. The lower entry cost of government-oriented investments has brought a much larger scale to those projects invested in such manner and made repeated construction more common.**

Compared with private investments on the market, this kind of investments often has a lower entry cost because of its innate social features of government-oriented investments, the multi-dimensional nature of the power held by government officials and the actual situation of the current financial system in China. It may be caused by the following specific reasons.

First of all, government investment mainly includes two capital sources, namely, financial allocations and bank loans. Most of project fund financially allocated is the one-way fund introduction of the government for national economic system. Actually, such capital input often doesn't have to pay back directly, not to mention interest. For another type of fund sources, bank loans, banks and local governments are nothing but such two departments of the state section-level system financing under the specific conditions of state monopoly in the financial field, and in most cases there are countless interpersonal networks among them and even they may be subordinate relations, direct or indirect, within their specific administrative system. Therefore, on the one hand, those government officials in office can take advantage of their power and interpersonal connections to reduce the cost of bank loans significantly; on the other hand, under the background of China in which banks and finance are closely related to each other in essence, bank loans tend to be used as a part of financial project funding and thus banks are negligible in borrowing costs. Secondly, since government regulation (mainly refers to approval limit in investment entry) exists in some departments and industries, these investments driven by government officials are easier to be approved, and the entry cost of such investment are relatively low, which has been resulted from the multi-dimensional nature of the power held by government officials and the interpersonal connections accumulated in this manner play a role in cost deduction. Finally, the multi-dimensional nature of the power held by government officials is also expressed in their control over related elements. Government officials in office make the entry cost of government-oriented investments further reduced through bringing other element resources (such as land, local credit, etc.) into play.

The law of demand in economics tells us that under the situation in which other conditions remain unchanged the decline of cost (price) is bound to stimulate the rise in investment quantity (demand). Therefore, it is safe to determine that the investment propensity of government officials is stronger than that of

private investors even when they are in the same condition, in real life, which has been confirmed at least in two indicators such as investment scale and investment entry degree.

Specifically, for one thing, owing to the relatively low investment cost, the government bears less pressure from cost constraints while making decisions in the same project investment. Thus the project scale determined ultimately is divorced from market standards and tends to be blindly large and strong. For another thing, when the investment object has been identified as a particular industry (field) , the lower cost can also make the the entry space of government capital much larger than the market standard, resulting in excessive entry of government-oriented investments into some economic areas (departments) , investment overheating and repetitive construction. It should be noted that excessive investment, overheating investment and repeated construction of the problem are not proprietary to government-oriented investments because such problems can be also triggered when private investors on the market have errors in decision making. The difference is that it is more obvious in the former. The crux of the matter lies in the departure of private investors can be automatically corrected by the market within its elastic range. For government-oriented investments, however, such market correcting activities will be greatly weakened because of its lower entry cost and higher withdrawal cost, and even ultimately it is embodied in the rigidity and failure of the market.

**b. Government-oriented investments have higher withdrawal barriers, which has led to serious related problems such as soft budget constraint and local protectionism.**

Compared with private investments on the market, government-oriented investments have lower entry barriers, but withdrawal barriers are often higher. At present, the main factors that have been affecting and resulted in this situation can be simply summarized as follows: Firstly, as it has been pointed out in the discussion on the chain structure determined by the interest of government officials in section-level system, there is a multi-layered entrusting link between the individual income of government officials and their capital's using results, which has made their proprietary corresponding degree tend to be weakened. In the actual social life, those officials in office pay more attention to the achievements that their capital will create rather than the results after their capital is used.

If the corresponding relationship between investment efficiency (profits) and achievements has been distorted or reduced for some reason (such as information asymmetry), the withdrawal barriers (cost) of such investments must go off market standard. The fundamental standards for measuring

government officials in office who drive capital flow into or out of a field lies in their political gain and loss. Taking actions to withdraw the investment at least mean that their former investment entry decision has some mistakes (even amounts to admitting their policy failure). This self denial behavior will bring about a disastrous result to their official career. In most cases, their political cost is far much higher than the corresponding economic losses. The huge difference between political cost and economic cost in the process of capital withdrawal is the main reason that makes government-oriented investments have a higher withdrawal standard compared with market standard. The multi-dimensional nature of the power held by government officials enables them to mobilize other resources in their hand to launch supporting and saving activities for the existing investment projects at low cost (for officers).

Such unique advantage born within the sector-level system actually has increased the opportunity cost of their withdrawal decision and further strengthened withdrawal barriers of government-oriented investments. In the specific social and economic life, the difference withdrawal barriers between private investors and government officials in office means that when the market has made a judgment that this investment had failed the optimal strategy for private investors is to withdraw from the market rapidly in order to minimize capital losses. But withdrawal constraints that drive government officials in office will be higher. In this case, government officials make use of their power and resources controlled to save and help the existing projects, and the sustainability of such activities will be reinforced with the reduction of additional cost. In fact, such rescue activities represented by soft budget constraint and local protectionism not only is the inevitable result that the withdrawal standard of government-oriented investments is higher than that of the market but also, in turn, will stimulate such withdrawal barriers to be tougher. Due to this inner inherent influence of self-reinforcing mechanism, these two kinds of phenomena mentioned above have been reformed but with no any change and cast off but with no end for decades in the economic life in China. The so-called part that government's leading investment withdrawal barriers of government-oriented investments are higher than that of the market mainly depends on the cost calculation that government officials in office take their political cost into consideration and then launch saving activities.

## **5.2. The effects of government excessive investment**

The phenomenon of China's government investment exceeding 50% in 5 consecutive years (2006-2011) is unprecedented, impacts the stability run of China's economy, and also influences the resource allocation efficiency and income distribution.

### **5.21 Promote the urbanization**



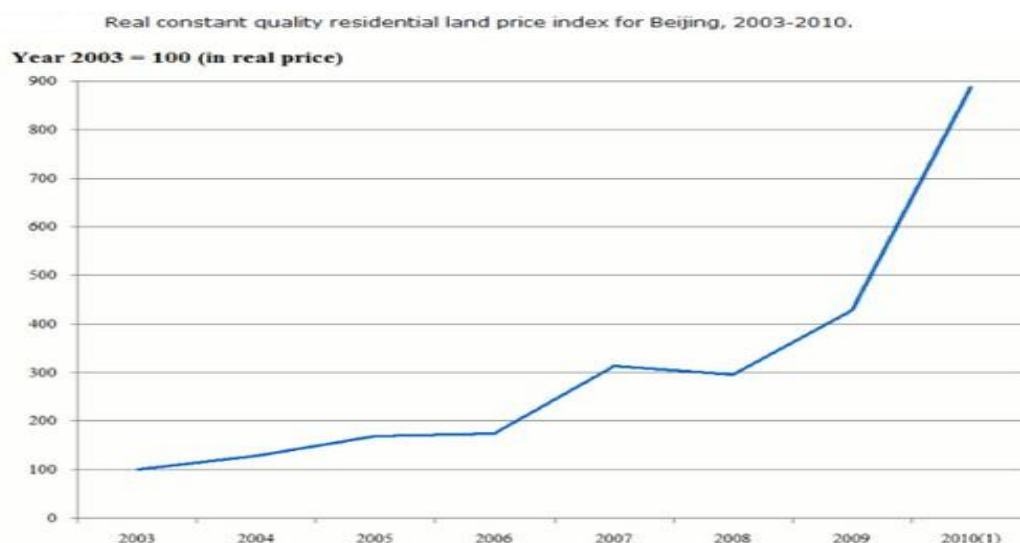
In the past three decades, the incredible fixed asset investment reflects China's rapid development of urbanization and industrialization. The urbanization rate increased steadily from 19.3 percent in 1980 to 51.2 percent in 2011, average increase 1 percent per year. In according with data calculation, for per 1 percent increasing of urbanization rate, the amount of investment equivalent to 5% of GDP will be needed.

Tremendous changes in infrastructure facilities have taken place because of rapid urbanization. For example, more than 1.1 billion square meters new living house were built in 2010 and 2011; the length of highway is over 4 million kilometers until 2010, and that was 4 times than 1980's; and the length of railway reached 90.12 thousands kilometers now, nearly 2 times than 1980's. The huge fixed asset investment and the increasing of resident income promote China to be the biggest auto market. Since China entry WTO in 2001, the process of industrialization also was accelerated. The growth rate of manufacturing sector investment was higher than gross investment. The industrial output and export in 2011 increased by 10 and 7.6 fold to 2000 (Calculated by current price).

## 5.22 Real Estate Bubble

After the collapse of the real estate bubble in 1992-1995, housing price and real estate investment stagnated. From 1999, with the government push to stimulate economy growth, real estate investment was gradually restored. Expansionary monetary policy (persistent low real interest rate and expansion of money supply), being one of the major policy pillars of the growth strategy, played a direct role in the restoration of rapid growth in real estate investment.

Figure 6 Real constant quality residential land price index for Beijing, 2003-2010

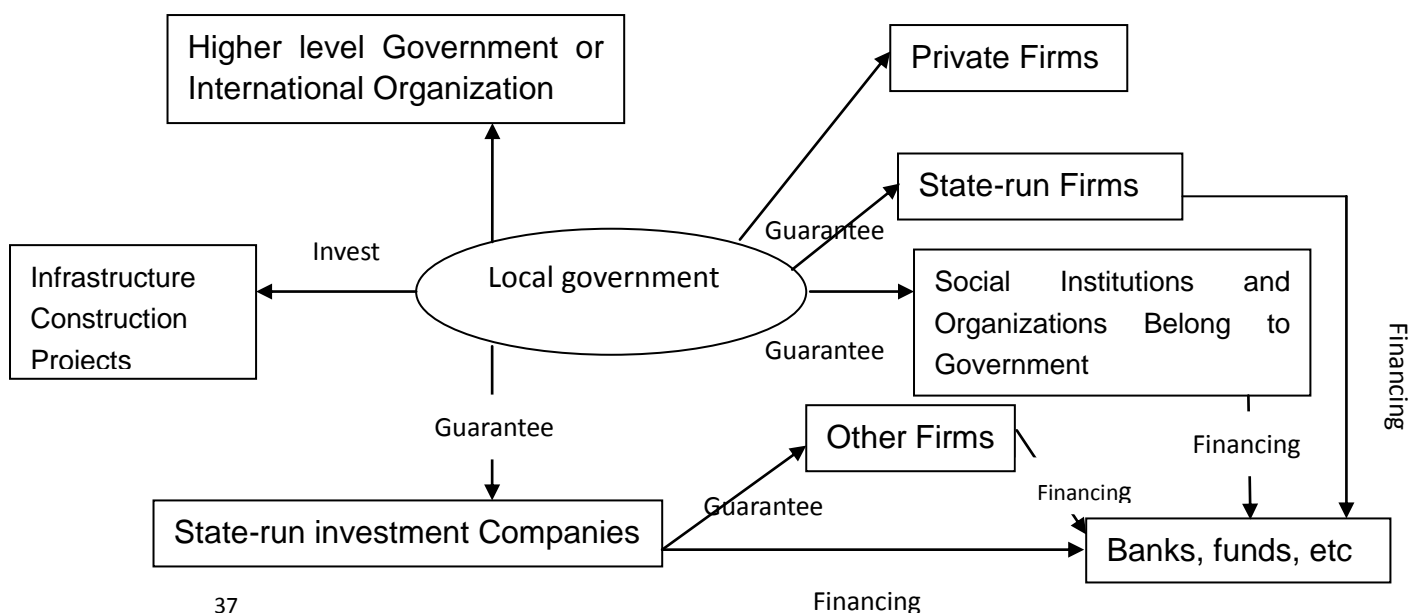


Source: China's National Statistic Bureau Annual Book

The restoration of rapid economy growth after China entry WTO further stimulated the growth in the demand for housing, which in turn promoted rapid housing price increases. When price increases significantly exceeded low interest rates, the mild response of the government further encouraged price increase expectation, leading to large-scale speculative and investment demand, which in turn further pushed increases in prices. Housing price increases, both current and expected, directly push up land prices. A new real estate bubble has emerged, which will further promote excessive investment in real estate. Furthermore, once the excessive investment reaches a certain scale, a vested interest will have been formed among banks, local governments and real estate developers to maintain real estate bubbles to secure investment returns in the future.

### 5.23 Local government debt issue

Due to the excessive investment, local government debt shows characteristics of diverse forms, strong concealment, low transparency, complex causes, vacancies of debt risk warning and control mechanisms, et. At the present, China's local governments have been burdened with very large debt which has a substantial and rapid rising trend, and the risk has been highlighted in the local areas. The potential risks are bigger and cause a serious impact on the local economic development and the normal functioning of the local governments, even threatening China's economic security and social stability. Effective countermeasures have to be taken to control and resolve the debt risk of the local governments, such as improving relevant laws and regulations, normalizing governments' borrowing behaviors, establishing local government debt management accountability mechanisms, controlling strictly the size of the local government's debt and preventing new unreasonable debt, establishing debt risk warning and control mechanisms, etc.



### **a. The scale of China's local government debt**

In 2010, the national fiscal revenue reached 8308 billion Yuan, increasing 21.3% than last year. But in the meantime, according the 2010 annual audit of central budget implementation report in national people's congress by general auditor Liu Jiayi in June 2011, sum total of government debt of the provincial government, municipal government and county-level government reached 10717.49 Billion Yuan, concluding 8560 Billion bank loan, even higher than national fiscal revenue. From 1996, the local government debt was increasing rapidly, especially in 2009, the new increasing debt reached 3410 Billion Yuan, increasing 61.9% than last year, and the total local government debt accounted for 26.5% of China's total output. And the municipal government debt and county-level government debt covered 43.51% and 26.53% of total debt, respectively.

Table 13. The estimation data of China's local government debt (Billion RMB)

<b>Year</b>	<b>GDP</b>	<b>Direct Debt</b>	<b>Related Debt</b>	<b>Total Dimensions</b>
2000	9921.46	1240.20	1885.10	3125.30
2001	10965.52	1370.70	2083.40	3454.10
2002	12033.27	1504.20	2286.30	3790.50
2003	13582.28	1697.80	2580.60	4278.40
2004	15987.83	1998.50	3037.70	5036.20
2005	18308.48	2288.60	3478.60	5767.20
2006	21087.10	2635.89	4006.50	6642.39
2007	26581.03	3098.56	3378.89	6477.45
2008	31404.54	3434.78	2866.56	6301.34
2009	34050.6.9	6077.19	3633.93	9711.12
2010	39798.30	6710.95	4006.54	10717.49

Source: Zhang Bin's research on The Empirical Analysis for Risks Management of Local Government Debt [23]

### **b. Shadow banking—The risk of local government debt**

As it is revealed in the results of No. 35 audit results in 2011 issued by the National Audit Office, the local governmental debt balance had totaled RMB 10,717.491 billion by the end of 2010, and there were 78 municipal governments and 99 county-level governments whose debt ratio in liabilities for repayment had been above 100%. Due to their poor debt paying ability, some local governments had no choice but to raise new loans while repaying old debts. There were 22 municipal governments and 20 county-level governments whose ratio of raising new loans while repaying had exceeded 20%. What's more, there were overdue debts in some cities and counties.

There were 4 municipal governments and 23 county-level governments whose ratio of overdue debts had exceeded 10%. Local debts were gradually entering a peak period of repayment. However, local finance couldn't afford such heavy debts and thus local debt liquidation has been faced with many difficulties. On the one hand, it shall be fully aware that with a weak debt paying ability in some areas and industries, there are hidden risks indeed. For example, individual local governments have heavier liabilities for repayment; some cities and counties heavily depend on land transfer income in repayment; and highways, ordinary universities and hospitals in some areas have large-scale debt and thus they bear higher pressure from repayment. On the other hand, the debt liquidation of local governments will reduce their credit ratings, and stricter commercial bank loan approval, higher loan interest rate and higher urban debt interest will exert restrictions on the financing amount of local governments and then reduce their investment in fixed assets. The capital from investment in fixed assets will also decline, which will immediately influence the absolute value of GDP. The fall after rise of economic growth rate will directly lead to the slowing growth of people's material standard of living.

## **5.24 Inflation**

As we know, the basic indicator of investment growth is investment growth rate and the basic indicator of inflation is the inflation rate. Investment growth rates are the annual growth rate at constant prices. Inflation rates can be determined by two indicators: consumer price index (CPI) and GDP deflator. The first indicator reflects the price movement of goods and services for household consumption in a given period; the second indicator reflects the price movement of all final products within a given period. Final products include goods and services for household consumption, goods and services for government expenditure, goods and services for investment, and goods and services for export and import. Obviously, the first indicator involves a narrow range of goods and services, whereas the second indicator involves a broad range of goods and services. While each has a different focus, both indicators are regarded as important to reflect the level of inflation.

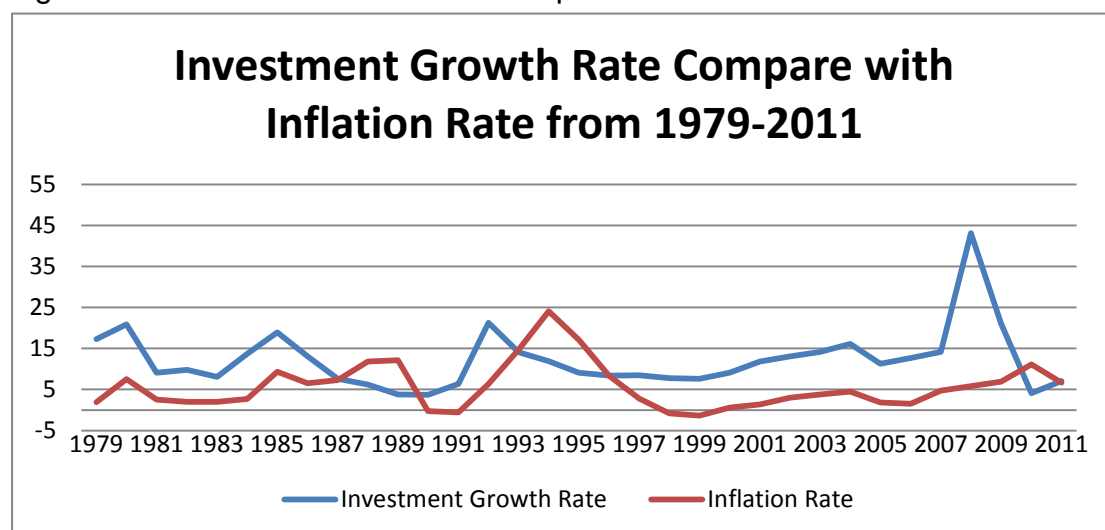
In just 30 years since 1978, there have been six times of inflation, the frequency thereof reached once per year, far exceeding the level of western developed countries.

The first inflation since the reform and opening-up occurred around 1980. At that time, the central governments in brought forward a plan to develop and continue around 120 large-scale projects and build 14 large-scale heavy industry bases in the period between 1978 and 1985. The aim of the campaign was to increase industrial yields by 10% per annum during the 8 years. Thanks to the policy, the scale economy entered a fast track and so did the price index. The second inflation took place around the period between 1984 and 1985.

At the Twelfth CPC National Congress in September, 1982, the party formally announced its strategic economic objectives, namely to quadruple the agricultural and industrial yield of China by the end of 20th century. Motivated by this strategic objective and the encourage from the central leaders, the government's enthusiasm for investment was high flatted, especially that of local government. From early 1984, local governments entered a race to expand the scale of investment required in order to achieve the objective of quardruple in advance. The scale of fixed assets significantly increased, aggregating the total demands, making wage income outgrow labor productivity and product costs increased rapidly, and in the end, driving the price index to go up. The third time was in the period from 1987 to 1989. The central austerity policy from 1984-1985 had not been effective, yet in 1986 the country's economic policy turned to easing again, causing the investment scale and demand to expand in fast rate. In 1985 the CPI reached a record high. The fourth inflation occurred in 1993 when the fixed-asset investment grew excessively and the financial system went into chaos. In early 1992, Deng Xiaoping made his famous "Southern Speech", calling for the acceleration of the reform and development. The fifth inflation occurred in the period between 2003 and 2005, mainly represented by excessive because the local governments' efforts in promoting infrastructure construction and the central government's overall stimulus policy in order to counteract the impact of the economic crisis.

Throughout these six times of inflation, we found that each inflation was strongly relevant to "investment expansion", namely that large-scale investment drove the product price to increase. Over the past 30 years, the proportion of China's fixed asset investment in GDP has continued to rise and in 2010 alone, the proportion of investment in fixed assets in GDP reached a record high of 69%.

Figure 7 Investment Growth Rate Compare with Inflation Rate from 1979-2011



Source: China's National Statistic Bureau Annual Book

Table 14 Investment Growth Rate Compare with Inflation Rate from 1979-2011

Year	Investment Growth Rate	Inflation Rate	Year	Investment Growth Rate	Inflation Rate
1979	17.3	1.9	1996	8.4	8.3
1980	20.9	7.5	1997	8.5	2.8
1981	9.1	2.5	1998	7.8	-0.8
1982	9.8	2	1999	7.6	-1.4
1983	8.1	2	2000	9.1	0.6
1984	13.7	2.7	2001	11.8	1.4
1985	18.9	9.3	2002	13.1	3
1986	13.1	6.5	2003	14.2	3.8
1987	7.6	7.3	2004	16.1	4.5
1988	6.2	11.8	2005	11.3	1.8
1989	3.8	12.1	2006	12.7	1.5
1990	3.7	-0.3	2007	14.2	4.7
1991	6.4	-0.6	2008	43.1	5.8
1992	21.3	6.4	2009	21.1	6.9
1993	14.1	14.7	2010	4.1	11.1
1994	11.9	24.1	2011	7.1	6.7
1995	9.1	17.1			

Source: China's National Statistic Bureau Annual Book

### **The relationship between investment growth cycle and inflation cycle:**

By comparing inflation and investment growth, we have identified the following characteristics: a) the inflation peak value lags behind the economic growth peak value. In the second cycle, the investment growth rate peaked in 1985 but the inflation rate peaked in 1986. So the latter lagged 1 year behind the former. In the third cycle, the investment growth rate peaked in 1992 but the inflation rate peaked in 1994. So the latter lagged 2 years behind the former. In the last cycle, the investment growth rate peaked in 2009 but the inflation rate peaked in 2010. So the latter lagged on year behind the former. b) the inflation rate and economic growth rate simultaneously slide into the through. In the second cycle, the investment growth rate slid into 3.7 percent, and the inflation rate fell into -0.3 percent in the same year. In the forth cycle, the investment growth rate and the inflation rate both fell into a through in the same year in 1998.

The above characteristics indicate that an increase in the investment growth rate is often accompanied by an increase in the inflation rate; a decrease in the investment growth rate often accompanied by a decrease in the inflation rate. When the economic growth rate reaches its peak value, however, the inflation rate often lags a period of time before reaching its peak value. When the

investment growth rate slides into a through, the inflation rate often falls into a through at the same time. This implies that the investment growth rate has a greater impact on the inflation rate when the investment growth rate falls than when it rises. The above characteristics reveal an inherent link between inflation and economic growth.

In the second cycle, the average annual investment growth rate was 16.7 percent; the average annual inflation rate was 9.6 percent,. In the third cycle, the average annual investment growth rate was 15.6 percent; the average annual inflation rate was 17.2 percent. In the last cycle, the average annual investment growth rate has to date been 26.1 percent; the average annual inflation rate has been 7.7 percent. The common characteristics of the three cycles how that the average annual economic growth rate is higher than the average annual inflation rate; the investment growth rate has a smaller Magnitude of fluctuation than the inflation rate.

## **6. Conclusions and Recommendations**

Between 1990s and 2000s, China is in the process of transition, achieved remarkable growth, and in the meantime, the government investment also reached a record high level. Central government gradually decentralized most of the control power and passed it to local governments. The local governments, as an independent economic actor, participated in the economic life actively, expanded the investment with great efforts so as to develop the local economy. This is an important step in China's gradual reformation, which promoted the economic development and the growth of employment. But on the other hand, local governments are not real entrepreneurs, and they will not bear the risks of investment failure like real entrepreneurs.

Their investment criteria are also different from entrepreneurs', and they would not make the investment decision according to the profit of investment. In fact, the investment and constructions sponsored by local governments usually have such character as soft budget restriction and loose restriction, which cause the local governments to have strong incentive to invest. The investment without strict budget restriction is generally inefficient. As a result, the investment sponsored by local government is not Pareto efficient and the resources are somewhat wasted which hindered the optimal distribution of resources. As a result, abundant local government investment could hardly draw more private investment, and the multiplier effect of investment is low. Moreover, the investment sponsored by local governments, such as investment in city infrastructure, in high-tech garden etc., is mostly capital intensive. Though this kind of investment is huge and has a remarkable positive effect on short term economic growth.

The local governments become the main actor of investment and impetus of economic growth, which is only one step in the process of China's gradual reformation, rather than the whole. In the future, with the further development and perfection of China's marketing economy, the role of local governments in investment should be weakened. The local governments of different levels must lessen their direct intervention in economy, and give the controlling and decision power to enterprises. Thus, enterprises become the real actor of social investment, and the local governments of different levels concentrate themselves on public administration.

Under this kind of condition, to thoroughly solve the excessive investment issue, China's government should consider to adjust its growth strategy. According to the report of Former President Hu Jintao in the 18<sup>th</sup> China's Communist Party, the most important target in next 10 years for China's government is going to rebalance its economy, to deduce investment rate, increasing the domestic demand. In the 12<sup>th</sup> five-year plan, China proposes setting a concrete investment target rate within the range of 30-35 percent in the further. Except some sensitive political reform advise, to achieve these policy objectives, some concrete policies should be adopted.

First, policy should be implemented to realize interest rate marketization. Raising interest rates and speeding up the process of interest rate marketization are necessary preconditions for combating excessive investment. Increasing interest rates can directly increase investment costs and lead to a decline of demand for investment. Furthermore, an increase in interest rates can help to depress real estate market bubbles. Actually, interest rate marketization was under discussion for a long time. To effectively control excessive investment, Communist Party of China should set a clear-cut timetable to achieve the marketization of interest rate.

Second, a clear limited principle for investment should be set by central government to let the local government understand where the boundary is. The rapid increase in local government investment expenditure has played a key role in promoting excessive investment in infrastructure. Therefore, in order to effectively limit excessive investment in infrastructure, apart from increasing interest rates, the further reform of the fiscal system should be necessary, and to establish the strict legal procedure for government expenditure, and making investment projects fully transparent.

Finally, the real estate bubble needs to be controlled. When per capita income reached a certain level, pushed by joint forces of high growth, high saving and low interest rates, a real estate bubble becomes almost inevitable. In the absence of effective control, a vicious circle between the real estate bubble



and excessive investment in real estate will be formed: a real estate bubble stimulates excessive investment in real estate; conversely, excessive investment will encourage the vested interest group to maintain the real estate bubble. Given high growth and high saving, simply increasing interest rates is not sufficient action to control the real estate bubble, and further measures are needed, including: a) restricting bank loans to real estate; b) increasing the flexibility of land supply.

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